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JAPANESE INDUSTRIAL STANDARD

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JIS D 4231: 1995

Inner tubes for automobile tires

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Inner tubes for automobile tires

1 Scope

This Japanese Industrial Standard specifies the inner tubes for tires of automobiles (¹) (hereafter referred to as “tubes”).

Note 1: The tubes mentioned here refer to the tubes to be used for tires specified in JIS B 9202, JIS D 4202, JIS D 6401 or the standards specified by public organizations.

Remarks 1: The following standards are cited in this Standard:

JIS B 9202 Dimension and load ratings of tires for agricultural machines and implements

JIS D 4201 Designation system of tyre, tube, rim band, and flap for automobiles

JIS D 4202 Automobile tyres — Designation and dimensions JIS D 4207 Tyre valves for automobiles

JIS D 6401 Dimensions and load ratings of tires for industrial vehicles and off the road service

JIS K 6251 Tensile testing methods for vulcanized rubber

JIS K 6257 Accelerated aging test methods for vulcanized rubber

Remarks 2: The units and numerical values given in { } in this Standard are based on the traditional units and are appended for informative reference.

2 Classification

The tubes shall be classified into the following two classes, as shown in Table 1, according to materials.

Table 1

Classification	Division
Class A	Natural rubber and the equivalent
Class B	Butyl rubber and the equivalent

the accelerated aging under the condition of Table 3 in the same way as specified in 4 of JIS K 6257. Then take out the test pieces from the aging test bath. After keeping in room temperature for 2 h, allow them to contract by quickly taking away the load. Furthermore, let them stand for at least 8 h; measure the distance between the bench marks; calculate the permanent elongation from the following formula (1); then obtain the mean value of the two test pieces.

Table 3

Test temperature	105±2°C
Test time	5h

$$PS = \frac{L_1 - L_0}{L_0} \times 100 \dots\dots\dots (1)$$

Where,

PS: permanent elongation (%);

L₀: distance between bench marks before test (mm);

L₁: distance between bench marks after test (mm).

6.3 Aging test

Prepare four test pieces in the same way as specified in 6.1. Subject them to the accelerated aging for 96 h successively at the test temperature of 70 ± 1 °C, or for 24 h successively at the temperature of 90 ± 1 °C in accordance with the method specified in 4 of JIS K 6257; measure the tensile strength; then calculate the decreasing rate of tensile strength compared with before the aging test, from the following formula (2).

$$A_c(TB) = \frac{X_0 - X_1}{X_0} \times 100 \dots\dots\dots (2)$$

where,

A_c(TB): decreasing rate of tensile strength compared with before aging test (%);

X₀: median value of tensile strength before aging test MPa {kgf/cm²};

X₁: median value of tensile strength after aging test MPa {kgf/cm²}.

7 Designation of tubes

The designation of tubes shall conform to JIS D 4201.

8 Marking

The tube shall be marked with the following items:

- (1) Designation of tubes;
- (2) Manufacturing mark;
- (3) Manufacturer's name or abbreviation.

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